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NOTICES.

The Optical Magic Lantern Journal and Photographic Enlarger is issued on the 1st of every month, price Two Pence, and may be obtained from all Newsvendors, Railway News Stalls, Photographic Dealers, or from the Publishers, at the following rates, post free:—

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EXCHANGE Column, General Wants, &c. (not Trade)—First 20 words, 6d.; and for every 3 additional words, 1d.

SMALL ADVERTISEMENTS must reach the office not later than the first post on the 24th of each month. All cheques and postal orders to be made payable to the Magic Lantern Journal Company, Limited.

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NOTES.

An Expressive Lantern Testimonial.—A well-known lantern maker in the Strand some time ago made a high-class triple lantern for a customer, who, after using it on several occasions, writes:—"The lanterns have been winning any amount of glory; they certainly are beauties, and their praises have been sung many times."

The Late Mr. Campbell's Business.—Messrs. Rae Brothers, of Glasgow, inform us that they have taken over the business of the late Mr. Campbell, 41, George Street, Perth, and intend carrying it on as practical opticians and photographic dealers.

Kodak, Limited.—The directors and shareholders of Kodak, Limited, are to be congratulated. The report shows the combined earnings of the English, American, and Colonial companies, after allowing for depreciation, directors' fees, etc., to be £335,919. This shows an increase over last year of about £92,348.

Royalty Series of War Slides.—Messrs. Harrison & Co., of 13, Berners Street, W., have just issued a series of slides pertaining to the African War. These slides are photographic productions from recent negatives, taken by relieving officers, and do not include made-up subjects or reproductions from illustrated papers. About 50 slides are now ready. They are sold at 3s. 6d. each.

Perken, Son & Co., Limited.—The firm of Perken, Son & Co. has been registered as a limited liability company under the foregoing name. This course has been taken for purely family reasons, and no shares have, or will be offered to the public.

Transvaal War Dioramic Effects.—Mr. Edmund H. Wilkie, who is a past master in dioramic effects, has brought out a series of war effects. So far seven different effect sets are ready. To give an example of these we will supply the details of one:—Buller crossing the Tugela at Potgieter's drift, scene on the river with wire ferry, the boat on the Boer side, a number of our men are seen to swim across the river and convey boat to the opposite side (off picture), the ferry-boat then crosses full of men, and on arrival at the Boer side they march off the boat into the bushes, the boat then returns and once more appears loaded with troops. During these operations a constant firing is kept up by troops on both banks and on the mountain and the water is alive with shells. This wonderful effect consists of 3 slides having 8 mechanical movements and is one of the most effective lantern effects ever produced.

Pictorial Historical Records.—This was the title of a lecture which Sir Benjamin Stone was to have given about a week ago at the Royal Institution. The intention was to present each of the audience with a printed copy of the lecture (which was to be taken as read) and only exhibit the pictures with a running comment on each, thus allowing the preliminary text matter to be gone over at leisure. A great number of excellent photographs were projected, including Windsor Castle; the plate valued at £2,000,000 which was spread before the German Emperor, a series pertaining to the Tower of London, also views in Derbyshire, Staffordshire, Warwickshire, etc. Many anecdotal comments were given during the exhibition of the slides. By an oversight the printed lecture was not ready in time for the audience to receive it, but it was explained

that it would duly appear "in the transactions of the Society." Notwithstanding the absence of the printed matter the exhibition with comments proved of exceptional interest.

Newton's War Slides.—We note that Messrs. Newton & Co. have published nearly 400 slides of the Transvaal War and of South Africa, many of which are from recent photographs, whilst others are from the *Illustrated London News*, *Spear*, etc. These are being added to week by week, so that they are able to supply their customers with new slides within a few days of the publication of the papers.

Compressed Acetylene.—Acetylene gas for railway-carriage lighting is used in the United States on the Cornwall and Lebanon Railroad. The gas is compressed, and is carried in the tanks formerly used on the same cars for ordinary illuminating gas.

Carbide of Calcium.—A Russian engineer (M. Orlovsky, of St. Petersburg) has made an improvement in the manufacture of calcium carbide, which has for effect the prevention of the absorption of damp and the more regular and slower evolution of acetylene when in contact with water. He places the carbide just when it comes from the electric furnace, and whilst still hot, in a mixture of one part of tar and forty parts of petroleum residues. It is also reported that Herr Wolff, of Berlin, has patented a process for its manufacture which entirely does away with the electric furnace. A compound of lime, carbon, and powdered aluminium is mixed together, and then fired by a slow match or torch. The aluminium, it is said, combines with the oxygen of the quicklime, and the temperature thus caused is so high that the lime melts and combines with the carbon.

A Lantern Lecture to the Deaf and Dumb.—Lantern lectures to the deaf and dumb are by no means uncommon, but being necessarily of a somewhat exclusive nature are not always heard of by the public. They are, however, often given and greatly enjoyed by the "mental hearers." Of course the lecturer must be well versed in the finger language, and in order that the members of the audience may follow the lecturer he must be well illuminated. Several such lectures have recently been given at Kilmarnock, the concluding lecture of the season being "A trip to America," given by the Rev. John Cairns, who is an adept at finger language.

Light Systems for Optical Lanterns.



EXHAUSTIVE experiments were some time ago conducted by Mr. A. Molteni in order to ascertain the relative intensity of the various methods of lantern illumination. These were embodied in a paper read before the Société Française de Photographie by Mr. Molteni, who in his discourse explained that in using the optical lantern, the first point to be examined is that of lighting; in fact, whatever may be the perfection of the optical system employed, the results are never perfect with a luminous source presenting any considerable size. The projection will be all the clearer according as the luminous source has a smaller diameter, and the maximum of clearness will be obtained if the luminous shaft emanate from a mathematical point. Thus it is with an electric arc light, which has the smallest diameter among the usual illuminants, that the best results are obtained.

The illuminants now used for projections are fairly numerous; I thought therefore that it might be useful to compare them one with another, not by computing their intensity directly in relation to a

given standard,

as is done in studying the ordinary questions of lighting, but from a point of view of the illumination of the screen. This study was all the more interesting according as the luminous product is not proportionate with the measured intensities of the free air.

The experiments show that the larger the dimensions of the luminous source, the weaker the appearance on the screen. In fact, it must be remembered that with the optical system of projection apparatus, only those luminous rays pass which are sensibly situated on the axis of the lenses, and that with a luminous source 4 inches high, for example, only the centre, to the height of about $\frac{3}{4}$ inches to $1\frac{1}{4}$ inches, is of any use, while with the intense illuminations of small diameter all the light passes through the lenses, as is the case with oxyhydrogen and electric arc lights.

The experiments were made with an ordinary lantern, in the groove of which had been placed a plate with an opening $2\frac{3}{4}$ inches square, corresponding to that in the masks used for mounting the lantern slides; the distance of the lantern from the screen was such that the projection was about a yard square.

The screen was replaced by the paper disc of the Bunsen photometer, and the other side was lighted by a lamp carefully gauged by a lamp burning about $1\frac{1}{2}$ ounces of oil per hour; the distance of the lamp gauge was varied so as to obtain an equality of light, and the intensities were deduced from that distance, which varied, of course, for each source of light tried.

During the different experiments, the lantern remained always at the distance necessary for giving a projection of one yard square. Here are the results obtained when working under these conditions:—

Oil lamp with several wicks	1
An Auer jet, No. 2, with reflector	1

ACETYLENE.

Burner with 1 jet, without reflector ..	1.06
" 2 jets " " " ..	1.70
" 3 " " " " ..	3.20
" 4 " " " " ..	4.10
" 5 " " " " ..	4.50

OXYGEN.

Alcohol and oxygen, oxy-limelight ..	5.80
Oxyhydrogen light	16.60
Oxy-ether light	18.50

ELECTRICITY (continuous current).

Ordinary incandescent lamp, say 30 candle-power	0.68
Ordinary incandescent lamp, say 50 candle-power, vertical	0.93
Ordinary incandescent lamp, say 50 candle-power, horizontal	0.93
Focusing lamp, say of 100 candle-power ..	3.82
Arc lamp, 7 ampères	3.82
" 10 " " " " " ..	39.03
" 12 " " " " " ..	75.61
" 15 " " " " " ..	117.61
" 20 " " " " " ..	160.80

In these days everybody has seen projections lighted by oil or by oxyhydrogen; the above table shows at once that a projection made by oxyhydrogen light is from 16 to 18 times better lighted than that made by means of oil, and that an arc lamp of seven ampères in its turn gives about twice as much illumination as the oxyhydrogen light.

With an Auer jet, or acetylene, a plated metal reflector augments the light about one-third, and a worked glass one about one-fifth.

It will be noticed that the rendition of an incandescent electric lamp of the usual style with a long thread, is the same whatever the position of the lamp; it is because these lamps act in the same way as the illuminants of large dimensions, which were mentioned at the beginning; the thread which is 3 or 4 inches long is only utilised in part of its length, say from $\frac{3}{4}$ inch to $1\frac{1}{4}$ inches.

The experiments were made with a lantern of the usual construction, similar to those which are generally supplied by the trade, but it must not be forgotten that the luminosity can be augmented by modifying the optical system.

By changing, according to the conditions desired, the condenser and the lens of the lantern used in the experiments, and keeping the same oxyhydrogen blow-pipe, the light rose to 19.5 instead of 16.6.



The Decline of Dissolving Views.

By H. ARMYTAGE SANDERS.

THE decline of the dissolving view is not a thing of yesterday or the day before; it is the gradual result of the change which is so apparent in all things to-day.

Broadly speaking, there are two classes of lanternists—professional and amateur. The professional has long since given up "Dissolving Views" as the headline of his bill, and has now taken up the cinematograph as a much more attractive and lucrative "draw." The public who frequent such entertainments are no longer satisfied or astonished by the effect of "Jerusalem in its grandeur and in its fall," but require to-day to see it in the *act of falling*; or the "Soldier's Dream of Home," be it ever so well painted and the effect ever so perfectly produced, is not satisfying enough to an end of the century hypercritical audience. They want that soldier embarking, fighting—aye, and dying in the trenches, if they are to be shown soldiers at all. Realism is the cry, and realism they must have.

What child of five, having once seen a good animated photograph show, is content with the too often ridiculous action of a lever or slipping slide? And the same may be said of children of older growth. The truth is, these things have been with us too long.

"The old order changeth," and other forms of entertainment have felt the change as much as the lantern world has the premier entertainment. The stage, and the British drama have had to change with the times, but it would be outside the scope of this short article for dilation to be made upon that theme. Mention may be made, *en passant*, of the fine old dioramas and panoramas which used to delight old and young—of the ghost illusions—of the glories of the departed Polytechnic and Colosseum (long since forgotten);

but excellent as they were in their time, we must acknowledge they are things of the past.

If we would seek the reason of this decline we must imagine ourselves filled with a desire to give the public a really fine display of dissolving views—with a determination to try and eclipse anything that has previously been shown, and how shall we set about this Herculean task?

Money being no object (at the start we will presume), we purchase the finest triple lantern with all the latest improvements, the description of which occupies at least a page of the maker's catalogue and entails the use of every adjective known in the English vocabulary, and having got our apparatus we needs must have an operator. Here our difficulties begin at once; operators of a sort are plentiful enough, but the operator who can manipulate a dissolving lantern skilfully so as to produce really effective results is a *rara avis*.

Not long since the writer advertised for an operator for a good entertainment, and of all the men who applied for the post only one passed muster, proving that the thoroughly

competent operator

is either a thing of the past, or that he has sought pastures new (may be at the front), owing to the little demand for his services.

It is this question of operators and operating which has driven the lantern into disrepute, and made the very words "Dissolving Views" a hollow mockery; one instance may be cited. The writer was invited to a special lantern service at a very popular church famous for its illustrated services. Candour compels the statement that a more wretched (and irritating to anyone with the slightest knowledge of lantern matters) display as far as operating went it would be hard to imagine.

The outline of one picture was never clearly seen upon the screen, but the faint outlines of a second picture at the same time. Magnificent slides and apparatus were used, but the whole effect was marred by incompetent operating.

Many lectures are comparative failures for the same reason, and similar fiascos will be in the minds of many readers who are in the habit of attending lantern shows.

There is no doubt the time is ripe for some scheme for the certification of operators, and it ought not to be an impossible matter to get the trade to form an influential committee for the adoption and carrying out of such an important movement both for the welfare of the operator and the general raising up in status of all concerned.

Certain Good Things.

By H.

AMIDST the quantity of apparatus and accessories which I have accumulated in the course of many years' lantern work—jets, lamps, saturators, lenses of all sorts and kinds, good, bad, and indifferent—there are certain of them which have never failed me throughout a long experience with them. In the following article I am going to express an appreciation of certain good things, or, perhaps I ought to say, of certain things which seem to me to be good. In doing so it must not be imagined that I am making any comparison whatever between the various makes and designs of similar articles, saying that one is better than another; I am only stating, for the benefit of those whose lantern experience is limited, what special pieces of apparatus have served me effectively and well. To do this involves the constant use of the first personal pronoun; I trust its frequent occurrence will be forgiven me.

First and foremost, my most cherished possessions in the lantern line are my Beard's regulators. Purchased nearly

10 years ago

they are as perfect as ever, and have never needed repairs or attention of any kind since they were bought. For years I carried in the lantern box a non-automatic fine-adjustment valve (a good thing in its way) as a "stand by" in case my Beard's regulator should fail, but I do not take that precaution any longer, for practice has proved to me that whatever else may fail it will not be this regulator. If this reads a little too enthusiastic it must be remembered that I am offering my own personal experience, and that I am speaking of the apparatus as I have found it, one of the most admirably effective and simple pieces of mechanism ever patented. Without it or some other equally good regulator, I would give up the use of compressed gases for ever. For the guidance of beginners I might add that regulators of all kinds should receive careful usage; that they should be shielded from extremes of temperature. With regard to "Beard's," it is well to occasionally unscrew the brass casing and see that the spring and all is in good order.

Next in my affections comes my saturator. The particular make I generally use is the "Gridiron," and it is to that one I specially refer, although I have every reason to believe at

least one other well-known make is just as good. When I first obtained my "Gridiron" it was with the intention of using it only under circumstances where it was inconvenient to obtain both hydrogen and oxygen for my mixed jets. Little by little, however, it has usurped the place of the latter, and now, I may say, I never use anything else but this saturator. It gives me a light all sufficient for my purpose, it is less expensive than some other forms of limelight, but above all its simplicity and reliability render it especially valuable to me. In the course of some five or six years' experience with the "Gridiron" saturator I have never had the slightest mishap of any kind; and as for "pops," it seems to me that one must deliberately go out of the way to produce them, and even then their occurrence is very problematical. The lanternist who uses a saturator, whatever the make may be, should be familiar with the method and plan on which it works; he should

thoroughly ascertain

the why and wherefore of every tap and portion of it; his knowledge of it should be theoretical as well as practical. The sum of my experiences with regard to the safety of this saturator is that it is practically impossible, except perhaps by wilful carelessness or ignorance, to bring about even the smallest mishap. The handling of ether itself is another matter; one cannot use too much caution with such inflammable stuff. The man who fills his saturator in a room where there is a lamp or fire belongs to the same category as he who looks for an escape of gas with a naked light.

In filling the "Gridiron" or any other saturator (a process which should be carried out by daylight or out of doors) care must be taken that no ether is spilt about on the apparatus itself, as carelessness in this respect may lead to trouble in the shape of smell when working. Absence of all unpleasant odour is one of the two advantages I claim for my "Gridiron" saturator; absolute silence in working is the other. A saturator which makes its presence known in a lecture hall by its odour must be leaking, more or less, somewhere—at the taps, valves or joints—and should be overhauled. With regard to working silently, my own instrument is possessed of a very desirable but probably exceptional peculiarity, and one which is a great convenience to me, since much of my lantern work is done among young folk. If, when using a big disc, I am forcing the light too close to hissing point, my saturator never fails to give me notice of the fact by a slight preliminary buzzing, audible only to anyone

very near the lantern. Unless this intimation (which is not the ordinary murmur of a jet under good pressure) is attended to, and the supply of oxygen reduced, it is shortly followed by a sudden burst of hissing. But the warning given enables me to anticipate this, so that it is possible to get the utmost out of the jet without any audience-disturbing hissing.

More often than not I work single-handed, operating and describing the pictures at the same time. On many an occasion it has happened that my interest has been fully occupied in dealing with the slides; and the light, beyond turning the lime from time to time, has received no attention from start to finish. Herein, to my mind, lies the comfort of using a "Gridiron" saturator—its uniformity of performance and the steadiness and silence with which it works. (I hope it will be understood that I am not claiming particular skill in manipulation; I am merely describing the apparatus as I find it.) With 4 ounces of ether and 10 feet of oxygen my "Gridiron" if once started would light a

moderate sized disc

for 3 hours without any attention at all, and supposing the lime to hold out, the light at the end would be precisely the same as at the start.

As to whether a saturator is capable of giving as good or better a light than a mixed jet, my experience leads me to believe that for a given consumption of gas the saturator wins easily; but if expenditure of gases is disregarded, then I should imagine that some of the newer high-power jets are more effective. But this I take to be merely because the actual jet portion of a saturator cannot, considering the price, be turned out in all respects as perfect as that of a modern expensive mixed jet. In fact, the latter, which is jet alone, frequently costs almost as much as the former, which is jet and gas generator combined.

Those forms of saturator which are not placed in the lantern have their uses, but I much prefer the kind which goes into the lantern itself, but with this proviso—the lantern body must have efficient means of ventilation. It is an easy matter to overheat the saturator. This has occurred more than once to me, and now I use a small metal lantern body barely 6 inches square, and which allows about half the saturator to be outside of it. By this arrangement, the outcome of many experiments, the saturator is kept at about the right temperature, and at the end of a long lecture is only just warm to the touch, and no more. These, then, are some of the advantages which

a longish experience has led me to believe that the "Gridiron" saturator, and doubtless other makes too, is possessed of. It is safe beyond all dispute, it can easily be managed so as to be quite silent, it will work with a minimum of attention, taking into account its effectiveness it is comparatively inexpensive, and is, all things considered, the most portable, reliable, and convenient method of providing a good limelight—at least, so I have found it.

I have left myself but little space to speak of other favourites of mine. Among oil lamps I have always found "Stocks" very useful. To get the utmost out of it requires a little practice and patience, but the results obtained will repay one. When using this lamp for lantern class work, I have always found it sufficiently powerful for the purpose.

Of the three condensers I happen to possess, I always fancy that the best of the bunch is a rather old 4 inch meniscus double-convex. It seems to work equally well with front lenses of various focus. Of front lenses, by far the most useful of my set is the 8 inch (back focus). I use it a dozen times for every once of the others. The 4 inch (back focus) is rather short for a lens, and the definition with a lamp is not all one could wish; but still it has its uses, and with it one can give a show in quite small rooms. It has also come in useful for illuminating tableaux, etc. Last but not least, Brin's oxygen and cylinders have become to me necessities in my lantern work. I have always found the quality of the gas and the business-like promptness of the firm equally satisfactory.

My lantern creed might, then, be summed up in three words, "Beard's," "Brin's," and a "Gridiron." For all I know there may be better than these, but this I am sure of, that each and all are good, very good for their several purposes.



Optical and Mechanical Effects for the Lantern.—No. XV.

By EDMUND H. WILKIE.

(LATE ROYAL POLYTECHNIC INSTITUTION.)



IN the last portion of this series of papers reference was made to the difficulties experienced by operators on account of the frequent breaking of slip glasses in effect slides, owing to the great heat radiated by some modern limelight jets. All those who are intimately acquainted with optical effects are well aware that opaque bodies absorb

more heat than transparent, and that black surfaces become hotter than white under precisely similar circumstances.

The slip glasses are, as a rule, blacked over the greater portion of their surfaces, comparative little being devoted to transparent painting, and for that reason soon become extremely hot when in the full glare of the light in the lantern. If the whole of the slip glass was exposed to this degree of warmth at one time, there would not be so much chance of a breakage occurring, but many of these movements have glasses 10 or 12 inches in length, and as only 3 inches at a time is exposed we have unequal expansion, resulting in most cases in fracture.

Now, excepting under very unusual circumstances this difficulty could be entirely avoided by following the plan illustrated in Fig. XLIII. Here we see the ordinary slip frame, but the side which would be towards the light in the lantern holds the slip movement, and instead of

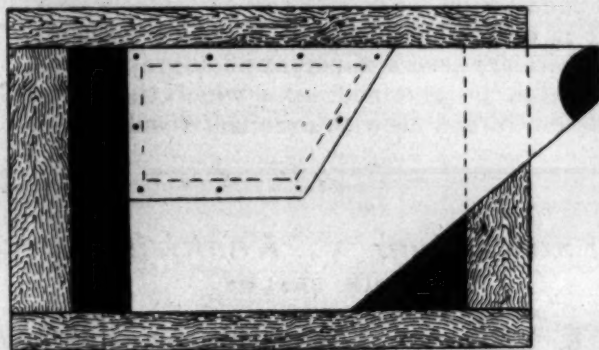


Fig. XLIII.

being of glass this slip movement is made of metal—either brass or zinc—and where the transparent painting is required a space is cut out and filled in with a piece of stout talc or mica. This substance is not affected by heat and can be painted upon as easily as glass and with just as perfect a result. The majority of effects are composed of slip motions, and this mode of preparation may doubtless be a great convenience to those using jets which give great heat in the lantern.

Amongst the most effective subjects for mechanical and dissolving effects are volcanic eruptions, fireworks and bombardments, the latter class being much sought after of late owing to the war at present raging in South Africa.

Prior to 1870 it will be remembered that at Easter the *façade* of St. Peter's at Rome was illuminated by hundreds of little oil lamps, which completely outlined the vast building, while the interior was illuminated by a gigantic fiery cross erected under the dome, and con-

sisting of a mass of small lamps so closely packed together that at a short distance they had the appearance of one great blaze of splendour.

This illumination especially lends itself to dioramic representation, as the effects are brilliant, and the background dark, and it can be recommended as being one of the most telling and satisfactory lantern effects in the ordinary dealers' lists. This is one of the effects which are more perfect when prepared on the basis of a good natural photograph than when entirely painted by hand, for it would be almost beyond the bounds of possibility for an artist to do justice to a perspective view of the interior of St. Peter's in the small diameter of 3 inches. If two photographs of the exterior are obtained in perfect register, one may be coloured as moonlight, and on the other may be worked up the illumination effect, with the perfect certainty that the effects on the screen will register without difficulty.

During the same festivities the Castle of St. Angelo, facing the bridge of the same name crossing the Tiber, was the scene of a grand and imposing display of fireworks, and this is illustrated in the following manner.

A picture is thrown on to the screen showing a portion of Rome with the river and distant hills, and on the left side of the centre stands the Castle of St. Angelo, which consists of one upright round tower of a diameter greater than its height. At the top of this tower are deeply set embrasures through which guns were intended to project. The scene is changed to night, and to produce the firework effect two separate slides are necessary, the first of which is shown at Fig. XLIV. It consists of a double

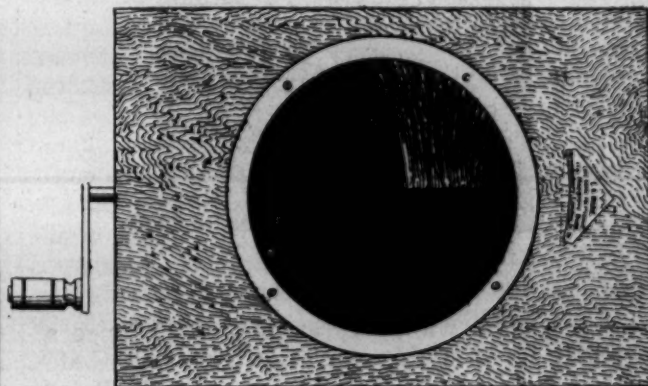


Fig. XLIV.

rack, or, as it is sometimes called, a chromatrope frame with a square fixed glass at the back, and on this fixed glass a number of lines are made on a black ground, to indicate the

paths of a flight of rockets. These lines stretch across the whole width of the top of the tower, and extend upwards to the edge of the picture.

Now, although these lines show the paths of the rockets they do *not* give the motion. If thrown on the screen they would simply appear as so many bright lines, so something further is necessary, and this we find in the movable glasses of the chromatrope frame.

Many lanternists will doubtless be familiar with the method of painting these two revolving glasses in order to imitate flowing water, and in this case the markings are the same, and consist of a series of half circles drawn with a very fine brush from the centre of the revolving glass to the edge. These lines should be not only fine but close together: there must be a large number of them in order to produce a really good effect, and care must be taken that the *convexity of the half circles* is to the right on one glass and to the left on the other, so that when they are mounted together in their frame and involved in such a manner that the *convexities* are opposed to each other, there is an apparent continuous outward motion from the centre to the edge.

This gives the appearance of the flights of rockets ascending, but something more than this is required. A rocket, especially if it is an expensive or elaborate one, does not simply rise and disappear without further result; it commonly throws out stars, coloured balls which



Fig. XLV.

change colour while descending, or at times a peculiar startling firework known to the ribald little boys as the "Devil amongst the Tailors." This latter, after descending a short distance, bursts with a loud report, scattering a shower of crackers in mid air, which add by their detonations to the effect of the first explosion.

Such an effect is tedious to make, but very effective to work, and consists of a number of

these forms of crackers, fiery serpents, etc., etc., drawn with a sharp point upon a blackened glass; the various designs being afterwards coloured in very bright tints, according to the taste of the artist.

Such an effect slide is shown at Fig. XLV., where the ingenious amateur artist may trace out for himself the various fireworks. In the lower portion of the effect will be seen the cascades of fire which descend from the embrasures of the Castle of St. Angelo.

It will be seen that to show this effect in perfection a triple lantern is necessary, as we place upon the screen first, Rome and the Castle of St. Angelo by day; secondly, the same scene by night; then on this scene the double rack is worked, while at the same time the blacked out effect of the bursting fireworks is flickered on and off by means of the flashing shutter on the lantern front; the whole forming one of the most perfect and striking lantern effects ever arranged.

It is commonly produced in hand painting, but there are several different photographs from Nature to be obtained, upon which this effect could be worked up with excellent results.



Lanternism v. Khaki-ism.

By JOHN SETLEY.

THE age is decidedly—for a little while at any rate—"a khaki age." Everything and everybody is in khaki. From the bootlaces to the necktie of the labouring man, from the crested note-paper to the opera cloak of "Her Royal Highness" or "Her Grace The Duchess."

The sound of the word savours of gunpowder fumes, of instruments of butchery, of soldiers of every size and condition fighting to the death. Shop windows are full of it. Paterfamilias have made up their minds that khaki suits shall be worn by their offsprings when the time comes round for the seaside trip. "Splendid," they say, "it corresponds so well with the sanded beach; and again, if they fall down in the mud before they get there it won't matter a bit, it'll dry alright and be as before."

Six months ago, perhaps, one only in say twenty knew what khaki meant, to-day perhaps the percentage is inversely proportionate, or, say, only one in twenty who do not know what it means. And all brought about by what? By the corruption of the Boer Republics. And though the canvas-like fabric, dusty brown in

colour same as the veldt that the British Tommies and our colonial brethren are treading to-day in South Africa, khaki is not quite so new as many would have us believe, as for a considerable number of years past it has been employed in our Indian campaigns.

In a lecture delivered by the writer many years ago, he finds he made use of the following sentence. The picture on the screen was the Broadway, New York, U.S.A. "You will notice in the foreground, ladies and gentlemen, dress in every variety, and bright colours are in abundance. The artist has made good use of his opportunity in giving effect to the yellow satin turban of this Turkish gentleman to my right, whilst the New York beauty next to him would very well pass for a peripatetic flower show, so numerous are her embellishments. Observe too, to the left, the two approaching British officers evidently on their return from India, the subdued khaki tint of their costumes being in happy contrast to the dress that surrounds them."

The lantern's overcoat—and all the upper-ten of lanterns possess overcoats—has always been in khaki, because it is the natural colour of the wood.

It may safely be stated that never before in the history of lanternism has it had such a busy time as the past few weeks has proved, and the boom in lectures of the Boer War type is bound to go on for months to come. It is doubtful whether the lantern lecturer is to be found who does not introduce some few pictures of the present war series into his subject matter, be the subject what it may; that is, of course, assuming he is not solely dealing with Boers and those who are

" . . . Out on active service
Wiping something off a slate."

The lantern has ever held first place as an informer. It diffuses knowledge in a way that no other scientific instrument can, and it is the truth of this that stamps its present day popularity. Think for a moment what is going on all over the country, in which the lantern forms the dominant part.

Every village and hamlet has had one, two, or more Boer lectures, and sent round the hat to stave off the first pinches of misfortune felt by the widow, the mother, and the little ones. This means work for the lantern.

Cities and large towns have had hundreds of such exhibitions, and have found that without the demonstrations on the screen the people will not go. And quite right, too, for what is the use of talking to an audience about the native runners, who have proved themselves

valuable by conveying news from point to point at the risk of limb and life, unless they are shown the determined look on that Kaffir's face whilst his employer bids him God's speed, and to mind he does not spoil his best clothes. Why, his wardrobe is a study to look upon. Or, again, fancy trying to enlighten a concourse of people on the 37 millimetre gun or field piece used by the enemy, or explain the superiority of "Long Tom" over "Joe Chamberlain," or "Lady Sarah" over "Tant Sannie." It cannot be done without consulting lanternism. And then, too, a passing thought as to extensive and costly shows of moving scenes at the front. The engineers at work constructing bridges, and we are shown, too, the completed article and the "Gentlemen in Khaki" marching over; grand artillery rushing to action; panoramas of battles. One gets a glimpse of Elandslaagte, Colenso, Graspan, Ladysmith, Kimberley, and lots more.

Certainly lanternism is busy in khaki.



Shadowgram or Silhouette Slides.

By THEODORE BROWN.

THE JUGGLER.—No. XIV.



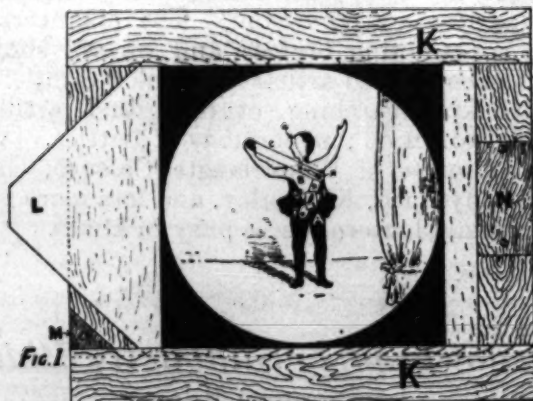
HE subject of the present mechanical slide is a juggler throwing a ball from one hand to the other over his head. If the reader will follow out the details of construction very carefully, he will be really surprised at the natural effect obtained when the slide is exhibited in the lantern.

The framework of the slide is made of wood, and as it is constructed in precisely the same manner as that of the slides previously described in this series, it will be quite unnecessary for me to enter into a description of it here. Two glasses are used, one fixed and the other movable. We will deal with the manner of fitting up the fixed glass first. A block, of shape shown in Fig. IV. (s), is glued to the centre of this glass. This block forms the groundwork of the body. Round it are painted the flaps of the coat (or frills, or whatever we may like to call them), the shoulders, head, and legs, as shown by the black portion of Fig. IV. It will be noticed that in this diagram the whole of the juggler's legs is not shown; they are shown completely in Fig. I.

We turn our attention now to the construction of the remaining parts of the juggler—his arms, etc. The arms, body, and head are made of

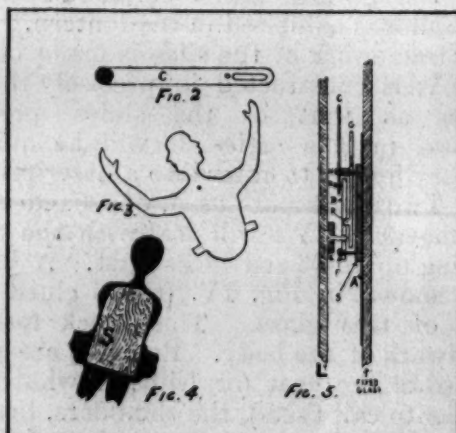
one piece of thin metal, tin, or brass, as shown in Fig. III. A hole is pierced just below the neck, and the two tongues on either side of the body are bent up at the dotted lines at right angles. It will be remarked that we have cut two faces opposite each other, and similar in all respects. The object of this will be revealed presently.

Out of a fairly thin piece of clear celluloid a long narrow strip is cut, as shown in Fig. II. (c). At one end it is rounded, and a ball painted on it in black. At the other end a small hole is pierced and a slot cut.



We now cut out of a piece of metal a small rod *D* (Fig. I.). This has a hole pierced in it at the extreme end, and just above the hole a small slot cut.

The various parts must now be pivoted in their proper positions to the body, *i.e.*, to the block *s* (Fig. IV.). The head, arms, and part of the body (Fig. III.) are pivoted at *H*, so that



g, the head with two faces, just registers over the black portion painted on the glass, which stands for the head of the juggler. The strip of celluloid with the ball painted at the end is pivoted at the same place on the body, *i.e.*, at *H*.

The rod *D* is now pivoted to the body at *F*. At the top of this rod is a small pin *R* (Figs. I. and V.), which works in the slot in the film. On the sliding glass *L* (Fig. V.) we now glue a small block *E*, bearing a pin which works in the slot cut in the metal rod *D*. The exact position of this block is, of course, determined when all the other parts are in their proper positions.

To understand thoroughly the exact manner in which each part is fitted up and connected with the others, the reader will do well to refer often to the sectional diagram (Fig. V.), to which reference has already been made.

If preferred, instead of painting the parts of the juggler on the fixed glass, the reader may cut the whole out of a piece of thin fretwood, and fasten it to the glass by means of glue. He may then glue the block *s* to it. In point of fact, the sectional diagram (Fig. V.) represents this as having been done, and *A* is the body so cut out and secured to the glass.

To finish off the slide, a few objects may be drawn on the fixed glass, *e.g.*, a curtain, and the whole masked off.

We will now consider what will happen when the sliding glass is pushed in and out.

First, when the glass is pushed in (as in Fig. I.). Then the rod *D*, being pivoted at *F*, is pushed over from left to right. As it is thus moved, it comes into contact with the tongue *P*, and as the body is pivoted at *H*, it causes the body to revolve from

right to left.

This throws the left arm (or the arm that appears left to the observer) down, and raises the right.

The strip of celluloid (*c*) is at the same time moved from right to left by the action of the pin (*R*) working in the slot, and the ball is apparently thrown from the right hand into the left. Also the double-faced head is thrown into the position shown in the diagram, with only one face visible, and that looking at the ball.

When the sliding glass is pulled out these operations are reversed. The ball is apparently thrown from the left hand into the right, which lowers to receive it, and the other face is brought into view, the first face being hidden. Thus is obtained the idea of the juggler throwing the ball from one hand into the other over his head, and, at the same time, turning his head to look at it.

To the audience no working parts are visible; they are all hidden behind the opaque body, and the celluloid being transparent, is also invisible, only the ball being seen apparently travelling in mid-air from one hand to the other.

The operator can easily vary the speed with which the ball appears to be thrown, but he must on no account jerk the glass as otherwise the ball will appear to stop in mid-air and then go on again of its own accord, and the effect will be most unnatural.

Hints and Formulæ.

LANTERN SLIDES ON FOGGED PLATES.

TO find some means of using up old plates or those which have been accidentally exposed to light without much trouble and to good effect is no doubt what many photographers have desired to do. The process, therefore, recommended by R. Defays is likely to be welcomed. First make the following solution:—

Copper chloride	..	20 grains	50 grammes.
Potass bromide	..	2½ grains	6 grammes.
Water	..	1 ounce	1,000 ccs.

Expose the plate—whether fogged or only stale—to a gas flame for 1 or 2 minutes at about a foot distance, or for a second or two to diffused daylight. Then in orange or yellow light immerse it in the above solution for 8 or 10 minutes. Wash for a quarter of an hour in running water and dry in the dark. At this stage the original bromide plate has been transformed into a chloro-bromide plate of the "gas-light" developing type. Expose for 20 or 30 seconds to diffused daylight, or for from 2 to 5 minutes at about 4 inches from a gas flame.

Several developers can be used, such as hydroquinone, metol-hydroquinone, or eikonogen-hydroquinone. The formula for the latter is as follows:—

Sulphite of soda	..	90 grains	200 grammes.
Eikonogen	..	7 "	15 "
Hydroquinone	..	2 "	5 "
Soda carbonate	..	45 "	100 "
Potass bromide	..	½-1½ "	1-3 "
Water	..	1 ounce	1,000 ccs.

Dissolve in the order given. Fix the plates in an acid fixing bath. This process is especially useful in the case of large plates which, instead of being thrown away, can be made into very pleasing window transparencies.

LANTERN SLIDES BY A SIMPLE DRY COLLODION PROCESS.

In the minds of many amateur slide makers the word collodion—as touching a process for making slides—is synonymous with difficulty and mess. These should peruse an article by

Herr Dr. B. Wandolleck, which appears in the *Photo Kalendar* for 1900, and describes a very simple dry collodion process. For the benefit of those of our readers who may wish to try it and do not read German, we give the staple of Dr. Wandolleck's communication. First, thoroughly clean the glass plates and give a thin coating of india rubber solution; when this is dry flow over any ordinary negative collodion and dip in the following bath:—

Silver nitrate	..	100 grammes	440 grains.
Nitric acid	..	15 drops	5 drops.
Potass iodide (5% sol.)	5 ccs.		22 mins.
Distilled water	..	1,000 "	10 ccs.

As soon as sensitised in this bath they are treated with a 3 per cent. solution of tannic acid and allowed to dry. The sensitising and after operations are to be done in yellow light, and the prepared plates will keep in good condition for a month. Expose for 10 minutes or so at 20 inches from a petroleum lamp and develop in the following solution:—

Pyro	..	1 gramme	15 grains.
Citric acid	..	1 "	15 "
Water	..	300 "	10 ounces.

To each 30 ccs. (1 ounce) of which 5 ccs. (75 minims) of 1 per cent. silver nitrate solution is added at time of using.

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PATENT INTELLIGENCE.

The following List, relating to current Patent Applications, is compiled expressly for the "Optical Magic Lantern Journal" by W. P. Thompson & Co., Patent Agents, of 322, High Holborn, London, W.C., to whom all enquiries for further information should be addressed.

- | No. | RECENT PATENT APPLICATIONS. |
|-------|---|
| 1772. | 27th January, 1900. Carl Paul Goerz. An improved focal adjustment for binocular optical instruments. (Complete.) |
| 2132. | 2nd February, 1900. Ladislaus Emanuel Granichstaedten. Improvements in kinematographs or means for displaying a series of pictures. |
| 2133. | 2nd February, 1900. Ladislaus Emanuel Granichstaedten. Improvements in kinematographs. |
| 2152. | 2nd February, 1900. William Barnard Pinhey. Improvements in cinematographic apparatus. |
| 2283. | 5th February, 1900. Eugène Louis Doyen. Apparatus for use in taking, printing, and exhibiting what are known as animated photographs. |
| 2284. | 5th February, 1900. Eugène Louis Doyen. Apparatus for perforating, more especially intended for perforating cinematograph photographic bands of film. |

2285. 5th February, 1900. Eugène Louis Doyen. Improvements in apparatus for taking and exhibiting or viewing what are known as animated pictures and other pictures or representations.
2634. 9th February, 1900. William Shaw. An optical instrument and picture slides, or the like for showing moving pictures.
3402. 21st February, 1900. Auguste Dailliet. Improved means for the projection of cinematographic films upon a transparent screen.
3552. 23rd February, 1900. John Marshall Spink. An improved appliance for telescopically delineating distant objects in camera.
3037. 23rd February, 1900. Cecil Wray. Improvements in or connected with coin-freed apparatus for exhibiting series of photographs.
4011. 2nd March, 1900. Frederick Alfred Wallis. Improvements in portable screen frame apparatus for lantern views and similar purposes.

Copies of the following specifications may be obtained by remitting 1/- for each specification to W. P. Thompson & Co., Patent Agents, 322, High Holborn, London, W.C.

SPECIFICATIONS PUBLISHED.

- 4978 of 1899. Anderson and "X" Chair Patents Company, Limited. Collapsible dark-rooms for photographic purposes.
- 5304 of 1899. Haeriau. Preparation of photographic sensitised surfaces.
- 10544 of 1899. Appleby & Thomas. Mechanical slides for purposes of recreation.
- 25486 of 1899. Mason. Moving picture exhibiting methods and devices.
- 9199 of 1899. Swaab & de Lamprecht. Flash lamp for use with apparatus for exhibiting views and other purposes.
- 3266 of 1899. Palmer. Apparatus for the production of animated pictures.
- 3274 of 1899. Spooner (Hanau & Gauthier). Coin-freed and stereoscopic apparatus.

—:O:—

Correspondence.

Re THE INJECTOR MIXED JET.

To Mr. J. Hay Taylor, Editor.

DEAR SIR,—With reference to the question about Injector jets in last Journal's Notes and Queries column, "Leeds" will find it necessary when using both gases under pressure to use a regulator set to deliver at about 15 lbs. pressure on the oxygen cylinder, and one at ordinary pressure on the coal gas cylinder, that is if he wishes to get best results. I have used a pair of these Injector jets for past three seasons. Properly used the light given is excellent.

If "Leeds" will communicate with me, I shall be pleased to give him any further information I can.

Yours truly,

W. J. BUTLER.

Dudley Road,
Halesowen, Birmingham.

Notes and Queries.

J. H. (Exeter).—Relative to your query which we inserted in last Journal, we are informed that the lantern slides bearing the mark of a large C with a small c inside are introduced by Messrs. Watson & Son, of 313, High Holborn, W.C.

Amateur.—(1) It is not the shape of the condenser, but its focus which determines its suitability with any particular lens. There seems no reason why the condenser you speak of should not answer with the short focus lens. (2) From an ordinary blow-through jet using "town gas from the main" you should obtain from 200 to 250 candle-power.

J. Payne writes to say that in accordance with the suggestion which appeared in this column, he disposed of his old gas-bag at Stevens' auction rooms, Covent Garden, and that it was knocked down for 3s. 6d.

W. C. J.—The probability is that your six-way dissolver leaks round the plug. Remove this, and grind it in with a little very fine emery.

Owen J. Crush.—Messrs. Mawson & Swan will send on application their small pamphlet on transparency making.

Jas. Sowerby asks the quickest method of making a live or chemical tank for the lantern stage? *Ans.*—Place a strip of rubber, bent, of course, to the proper shape between two glasses, and clamp them together with small screw clamps.

Edgar Scott writes:—I have been recommended to write to you for certain lantern information. At present I am not a lantern user, but intend to join their ranks. I thought of having a lantern, using oil for a light; and a friend of mine tells me I cannot do better than get a Sciopticon lantern. Kindly tell me what you think of it, and also give me the name of the maker. *Ans.*—A lantern of the name you state was brought out in America many years ago, and also had a good sale in this country, but we think that all those who were connected with it are dead long ago. Probably your friend meant a lantern of the Sciopticon type. All oil lamps for lantern projection are copies more or less of this form, and can be procured from any dealer in lantern apparatus.

Lantern Slide.—You cannot use the Art historical slides of Liesegang in the ordinary to and fro carrier. You will require a push-through carrier, as these slides are longer one way than the English slides.

W. C. & Son.—1. Tracing cloth makes a good small screen for use with the Aphengescope. 2. With regard to the lenses, it is simply a matter of quality. Lenses giving a perfectly flat field are naturally more expensive.

J. T. Spittlehouse.—We do not know which slide Union you wish to join, please send us some further particulars. You will be able to get many of the slides you require from the collection of Mr. Harrison, whose advertisement you will find in this issue. If you desire war dioramic effects put yourself in communication with Mr. E. H. Wilkie.

C. J. Bellamy writes: Is there an agency for the "Cubique Acetylene" lamp in England? *Ans.*—We have seen them in several dealers' shops in London. Amongst others that of Mr. Tyler, of Waterloo-road, S.W.

Will Mr. A. Rateau, late of 17, Holborn, please communicate with us; a letter respecting an order for one of his Autograph machines has been forwarded to us.